**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION 10**
1200 Sixth Avenue
Seattle, Washington 98101

January 29, 2003

Reply To
Attn Of: ECL-112

Commander, Ft. Lewis *(sent via e-mail and regular mail)*
Directorate of Public Works
ATTN: AFZH-DEQ MS 17 (Mr. Eric Waehling)
Building 2012, Room 323
Ft. Lewis, WA 98433-9500

Subject: *Work Plan for Soil Sampling in Firing Ranges and Demolition Areas 2 and 3, Sampling and Analysis Plan-Soil, Data Management Plan, and Quality Assurance Project Plan Camp Bonneville, Washington, Dated January 6, 2003.*

Dear Mr. Waehling:

Thank you for the opportunity to review the subject report. Please find EPA's comments enclosed. Since the documents were so substantially modified from the original versions, they were re-reviewed as new reports. However, of primary concern is the fact that comments made by EPA on the August 2002 Work Plan and Quality Assurance Project Plan were not incorporated in the January 2003 revisions; these are re-submitted in the comments below. Also, a number of deliverables over the past several months have not been sent to EPA and/or EPA's contractor Gannett Fleming (e.g. the subject documents as well as groundwater sampling documents sent in December, 2002). In the future, please provide all documents to myself and to:

Tom Tobin
Gannett Fleming, Inc.
1411 Fourth Avenue, #850
Seattle, WA 98101

in order to expedite our review. It would also be extremely helpful if each deliverable is accompanied by: 1) a review schedule, 2) the status of Ecology and EPA comments if previous versions were reviewed, as well as a summary of any other changes made, 3) an email with an electronic copy of the deliverable, where possible and 4) a distribution list. It would also greatly expedite EPA reviews of Army deliverables if a preceeding email

were to be sent to all reviewers, where short review timeframes are likely, one to two weeks beforehand to ensure that regulators have adequate notice of incoming documents that are expected to be reviewed in a matter of days.

Please contact me at (206) 553-1220 or at sheldrake.sean@epa.gov with any questions or concerns.

Sincerely,

Sean Sheldrake, Project Manager

cc: Ben Forson, Ecology
Brian Vincent, Clark County

**Work Plan for Soil Sampling in Firing Ranges and Demolition Areas 2 and 3.**

**General Comments**

1. One of the stated objectives of the soil sampling activities is that in order to evaluate the presence of lead and explosive residues, the top one inch of soil will be sampled within the firing ranges. Leaching and oxidation occurring at the one-inch soil depth are likely to reduce the contaminant concentrations for the more soluble explosive compounds such as RDX and TNT. Soil samples collected from the one-inch will not provide analytical data representative of the contaminant concentrations in the deeper soil horizons. Considering the solubility and mobility of the contaminants of concern such as RDX and TNT it is unlikely that these compounds will be detected in the first inch of soil. In order to accurately evaluate the firing ranges for the presence of explosive residues soil samples should also be collected from 1" to 6'' for surficial samples and profiled at successively deeper intervals at "hot spots" (1.0-foot, 2-foot, 3-foot.....).

2. It does not appear from the text nor the reference lists that the documents for this project follow EPA guidelines nor CREEL guidelines for sampling Superfund sites and areas used for military operations. Such applicable guidelines include Document ERD/CRREL TR-02-1, written by the US Army Cold Regions Research and Engineering Laboratory (CRREL), which provides guidance for characterization sampling plans for firing ranges. Additionally, EPA Requirements for Quality Assurance Project Plans, EPA QA/R-5, dated March 2001, was not followed nor cited for this project nor was the EPA Guidance for the Data Quality Objectives Process, EPA QA/G-4, September 1994. (See also comment number #24.)

3. Please provide detailed descriptions of the specific activities relating to the elements of the actual field work and how it will be conducted. Please provide descriptions of all field operations to be conducted including where the samples will be collected, how they will be collected, shipped, and analyzed. Please also provide specific soil sampling and background locations.

**Specific Comments**

4. Section 1.2.1, Page 3, Second Paragraph. The text states that areas of the firing ranges such as target areas, impact zones, fire lines and

back stops will be excluded from this sampling program. Please indicate how these areas will be addressed, e.g. a "hot spot removal/verification program."

5. Table 4-1, Page 13. Please specify the list of "priority pollutant metals" which are included in this table.

6. Section 4.3, Pages 13 and 14. This section states that a DQO process was used to develop this work plan and to document the rationale for sampling and analysis. However, the sampling rationale is not clearly stated in this document. Please provide the rationale for the list of contaminants of concern, grid spacing, number of samples collected, and type of samples collected (such as composites versus grab samples) for this project. You may use the seven step Data Quality Objectives Process, which can then be used to verify that project goals were met through this sampling effort. Please reference the EPA Guidance for the Data Quality Objectives Process, EPA QA/G-4, September 1994, to clearly accomplish the above.

7. Section 4.3, Second Paragraph, Page 14. This section states, "The analytical DQOs are intended to enable comparisons with applicable screening criteria (the lower of the following; MTCA and EPA Region 9 PRGs if project specific clean-up standards are not established for each COPC)." Please specify the screening criteria or project clean-up standards that will be used for this project for each contaminant of potential concern in a table. Please also include/modify the above underlined text in the document.

8. Section 4.3.1., Page 14. This section states that previous investigations at other sites have detected lead and explosive residues in firing range soils. Please state in the text why some ranges will not have muzzle blast zone samples taken, e.g. firing range X has no identifiable firing point, therefore no muzzle blast zone samples will be taken.

9. Figure 5-1, Page 17. This Conceptual Site Model does not include the surface water pathway. For the purpose of human health and ecological risk assessments, overland flow and the surface water pathway would only be eliminated as a potential pathway if the distance to surface water is greater than two miles; however, this does not seem to be the case. The distance from most of the potential sources to surface water is less than two miles, and, in fact, some potential sources are located adjacent to surface water, per Figures 1-

2 and 1-3. Please include the surface water pathway in this Conceptual Site Model.

**Sampling And Analysis Plan-Soil**

**General Comments**

10. The SAP needs to be updated per the EPA comments which were made in October. Because no field analyses will be performed, additional samples will be sent to the project laboratory and so QA/QC samples need to also be increased. Please update Table 4-3 on Page 12 with the number of duplicate and MS/MSD samples that will be collected to meet the project requirements specified in this document.

11. This SAP does not include antimony, **barium**, copper, and zinc as COPCs. Please indicate why these are not COPCs and are not included in the list of analyses to be performed as these are commonly detected at small arms firing range target areas. Please include these analyses, at a minimum, in target areas to establish if these COPCs are COCs across the firing range as a whole (via method 6010) and retain other grided firing range samples in archive for reanalysis, if necessary. Alternately, please include these analyses in the entire firing range grid to establish these COPCs are not COCs.

12. Please specify the term "explosives residues" in the text. If explosives residues means EPA Method 8330, please replace this term with Method 8330 in the text. Also, as some analytes, such as nitroglycerine and PETN are not included in the analyte list for Method 8330, please specify in the text if these analytes will also be included in the laboratory analysis of soil samples.

13. The SAP and associated QAPP do not provide project required detection limits and quantitation limits for the analyses of contaminants of concern at the site. Please include a table in the SAP or QAPP with this project-specific information.

14. One of the stated objectives of the soil sampling activities is that in order to evaluate the presence of lead and explosive residues, the top one inch of soil will be sampled within the firing ranges. Leaching and oxidation occurring at the one-inch soil depth are likely to reduce the contaminant concentrations for the more soluble explosive compounds such as RDX and TNT. Soil samples collected from the one-inch will

not provide analytical data representative of the contaminant concentrations in the deeper soil horizons. Considering the solubility and mobility of the contaminants of concern such as RDX and TNT it is unlikely that these compounds will be detected in the first inch of soil. In order to accurately evaluate the firing ranges for the presence of explosive residues soil samples should *also* be collected from 1" to 6" for surficial samples and profiled at successively deeper intervals at "hot spots" (1.0-foot, 2-foot, 3-foot.....).

In addition, the locations for collection of background soil samples are not adequately identified by the statement in the text that the locations "...will be selected based on known site use." The Sampling Plan should describe the background locations in greater detail by including the rationale for background site selection and showing the specific locations on a map or in a figure included with the text.

**Specific Comments**

15. Section 4.0, Page 6. This section states that soil samples will be collected from 307 half-acre grids for the analysis of lead in range areas. Please provide the rationale and references for the use of a grid, spacing of this grid, and the analysis of only lead in range areas. (See comment #11 above regarding running method 6010 in its entirety to rule out other contaminants in the firing range)

16. Section 4.1, First Paragraph, Page 7. Please provide the references used for the determination of a 95-percent confidence level for characterizing an area through collecting five samples over a half-acre grid using the target theory.

17. Section 4.3, Page 7. This section states that soil samples collected from the muzzle blast zones will be analyzed for explosives, picric acid, and PETN. Please indicate the rationale for not including metals in this analysis of soil samples (See also comment #11 regarding method 6010).

18. Section 4.3, Page 7, First Paragraph. The proposed sampling interval of 50-feet across a single transect of the muzzle blast zone does not provide sufficient sample density to assess potential contaminant concentrations that may be present in the soils at these locations. Please increase the sample density to discrete samples every 15 feet.

19. Sections 4.4 and 4.5, Page 8, First and Second Paragraphs. A

deeper zone such a 1" to 6" should be used to evaluate the surficial soil samples at both demolition Areas 2 and 3. Vertical profiles of any "hot spots" should also be sampled. See also comment #14.

In addition, the text states that the soil samples in Demolition Area 3 will be collected "on the crater." The text should be revised to state that the soil samples will be collected both in the crater and on the crater berm at four compass points.

20. Section "Ranges to be Sampled", 500 inch A-A and Anti-Aircraft Ranges, Page 31. It is not clear what the "500 inch A-A" notation stands for in the title of the range description. Please describe the distinction between A-A and Anti- Aircraft which is often abbreviated A-A. Please include the rationale for assuming that no high concentrations of contaminants exists in the target/impact area(s) and the muzzle blast zone should be included in the text (e.g. This range is an anti-aircraft range; since firing occurred into the air, there was no concentrated target area and therefore…). Please also check that 500 inch is not supposed to be 300 inch.

**Quality Assurance Project Plan**

**General Comments**

21. The sampling method for VOC's and SVOC's should specify that no mixing of the sample will take place before sample collection and that no head space will be left in the VOC sample vial.

22. In comparison to the "US EPA region 9 Guidance for Preparing Quality Assurance Project Plans for Superfund Remedial Projects," the QAPP is missing the following items:

- A signature page for the project manager, quality assurance officer, etc.;
- Document control information (specifying plan section, revision number, and date of revision);
- Data usage; decisions to be made for which data are needed, uses of data;
- Rationale for analytical parameters;
- Project Schedule;
- Action levels or standards upon which decisions will be made (source or information cited).
- Acceptable level of confidence in data necessary for purpose of data;

- Individuals responsible for project management, overall quality assurance, organization responsible for laboratory analysis, individual responsible for data validation, etc.;
- Organizational chart;
- Chain-of-custody form;
- Analyte quantitation/detection limits;
- Action levels;

**Specific Comments**

23.
Table 5-1. Page 4. Please define "HPLC." Do you mean High Performance Liquid Chromatography or HPLC?

24.
Table 5-1, Page 4. The table indicates that aqueous samples will be filtered in the field. If samples are filtered then non-filtered samples should also be provided to the laboratory in duplicate of all those that are filtered to determine if any metals are lost during the filtration process.

**Waste Management and Minimization Plan**

**General Comments**

25.
This document does not indicate that liquid wastes generated from sampling activities, such as waste rinsate and/or solvents from the decontamination of equipment, will be stored at the site until this liquid waste is analyzed for all contaminants of concern. Please indicate how this waste will be characterized for disposal purposes?